

MOLDED PAPER PIPE

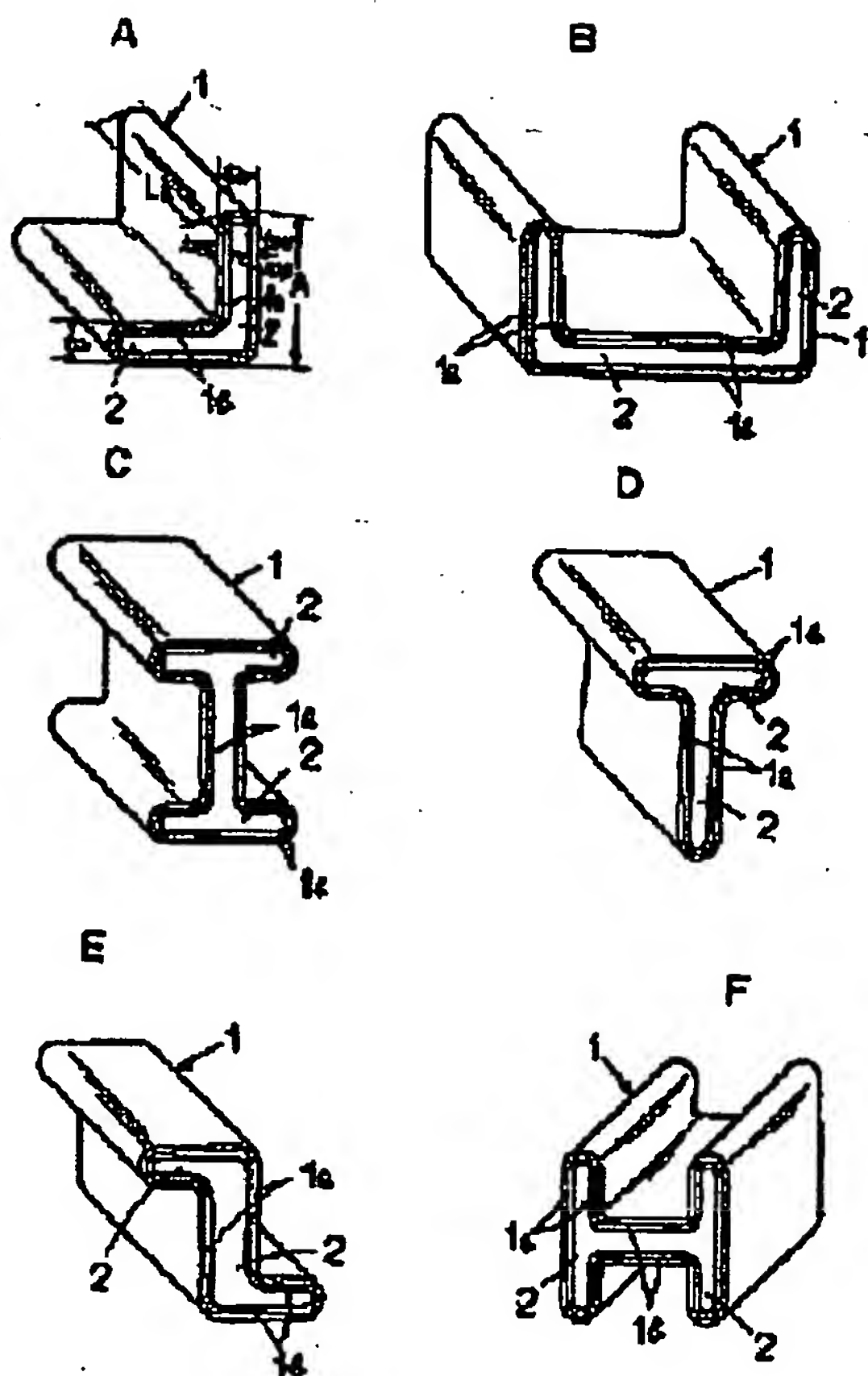
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Abstract of JP7276543

PURPOSE: To provide a molded paper pipe which is light in weight, elastic, strong, easy to handle, suppliable inexpensively and recycleable to reutilize and reuse after the paper pipe is finished its use.

CONSTITUTION: In a molded paper pipe 1, it has a sectional form of an angle shape, a channel shape, I shape, T shape, Z shape, H shape, etc., and it is constituted by providing a spatial part 2 running along an outer circumferential form of the molded paper pipe on its inside.



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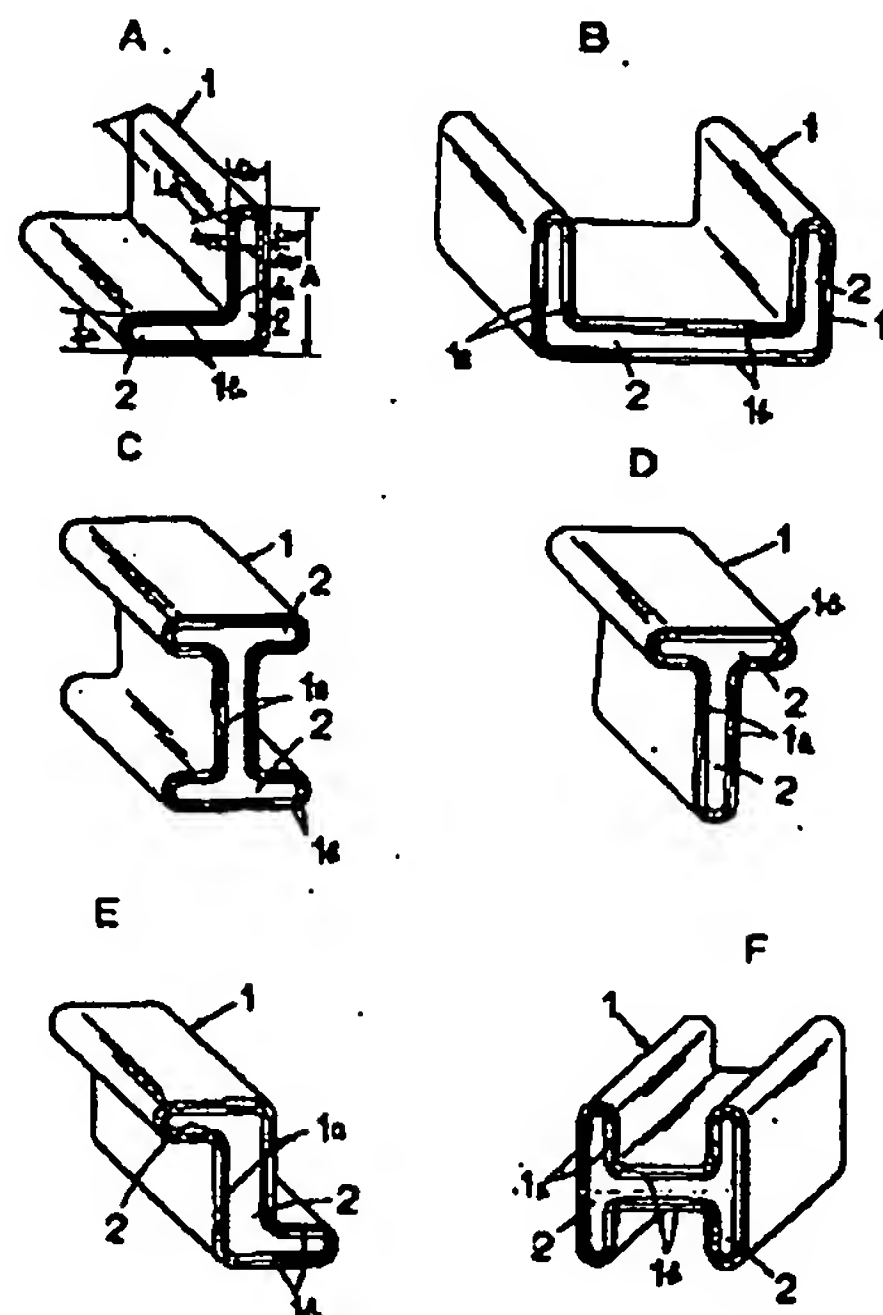
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(54) 【発明の名称】 形紙管

(57) 【要約】

【目的】 軽くて弾力性があり、丈夫で取扱いやすく、安価に供給できると共に、使用済み後に再利用、再使用するためにリサイクル可能な形紙管を提供すること。

【構成】 本発明に係る形紙管は、山形、溝形、I形、T形、Z形、H形等に形成した断面形状の形紙管1で、該形紙管1の外周形状に沿った空間部2をその内部に設けて構成されている。



在させてある形紙管および補強部材が壁面に設けた切目の切起し片で形成されている形紙管および上記補強部材が空間部を直交する小紙管で形成されている形紙管および補強部材が長手方向に挿入される波形板紙や丸形・角形紙管で形成されている形紙管を開発し、採用した。

【0014】

【作用】比較的薄い壁面を持ち内部に空間部を有する形紙管は、その空間部によって軽量化されると共に、弾性力が付与されるので、嫌振動物品の梱包緩衝材として用いることができ、また、空間部内に形状を維持する補強部材を介在した形紙管を用いれば、大型物品の緩衝材としても充分に使用でき、さらに、表面を耐水処理すれば型枠材として使用でき、軽くて取扱いが簡易になり、脱却や破砕も容易で使用済み後は、リサイクルの故紙として板紙等に再利用できる便利さがある。

【0015】

【実施例】

（実施例1）以下に、本発明の第1実施例を添付図面の図1に基づいて説明すると、1はスパイラル巻き、または平巻きで形成され垂直壁面1aと水平壁面1bとで構成された山形、溝形、I形、T形、Z形、H形等の断面形状にした形紙管本体である。2は垂直壁面1aと水平壁面1bの内部に形成した外周形状に沿う空間部である。

【0016】図1のAの山形紙管において、垂直壁面1aの厚さ taw と空間部2の内面壁面距離 tas と外部内径 la とは次の関係を有する。 $la = 2 \times taw + tas$ 従って、形紙管本体1は一辺の長さをAとすると、次の記号で表示される。 $L \times A \times la$

【0017】このように構成された形紙管本体1は、図15に示すように、これを予め段ボール箱Bの四角部に配置し、内部に嫌振動物品Gを収容して梱包緩衝材として使用すれば、緩衝性が良好で、嫌振動物品Gを全方位から加わる衝撃に対して保護でき安全に移送できるものである。

【0018】（実施例2）図2、3は第2実施例を示しており、その基本的形状は前記第1実施例と共通しているが、実施例1と異なる点は、形紙管本体11の上部の水平壁面11bに四角形、円形、半円形等の切目13を適宜の間隔を設けて施し、該切目13の切起し片14を下方に直角に折曲げ、空間部12に垂直片14aを立設させ、その下端を側方に直角に折曲げて水平片14bを下部の水平壁面11bに接合し接着剤15で固着するように構成したことであり、11aは垂直壁面を示している。

【0019】このように構成すると、切起し片14により空間部12が補強されることになり、壁厚が薄くても容易に変形せず、丈夫で形状を維持できると共に、切目13により形成される孔16と空間部12とが相俟って、より弾力性に富む梱包緩衝材となる。

【0020】（実施例3）図4～6は第3実施例を示すもので、その基本的形状は前記第1実施例及び第2実施例と共通しているが、実施例2と異なる点は、切目13に代えて、形紙管本体21の上下の水平壁面21b、21bに透孔23、23を貫設し、該透孔23、23に小さい丸形紙管24を夫々挿入して、空間部22に丸形紙管24を介在させ、その丸形紙管24の上下開口端24a、24aを拡開し、該拡開部を接着剤25を介して上下の水平壁面21b、21bに固着して構成したことであり、21aは垂直壁面を示している。また、図6に示すように、透孔23の位置する空間部22に内筒26を設けておき、該内筒26に丸形紙管24を挿入することもある。

【0021】このように構成すると、丸形紙管24によって空間部22が補強されることになり、壁厚が可成り薄くても丈夫で、弾力性があって空間部22の形状を維持することができるものである。

【0022】（実施例4）図7～8は第4実施例を示すもので、第2実施例と第3実施例を組み合わせたようなものである。すなわち、紙管本体31の上面の水平壁面31bと下面の水平壁面31bに八角形状の切目34を適宜間隔毎に施し、該切目34の切起し片35を、空間部32に設けた小型紙管の内筒36と外筒37の間に押し込むように折り込んで固定したものであり、31aは垂直壁面を示している。

【0023】このように構成すると、切起し片35が内筒36と外筒37の間に挟着されて外れることがなくなると共に、内筒36と外筒37の二重構造で補強され、より空間部32の形状維持が確実となり、かつ外筒37の空間部37aと空間部32とで弾性力が充分に発揮できるものである。

【0024】（実施例5）図9～14は第5実施例を示すものであり、上記第1～4実施例においては、いずれも水平壁面の外面に切目や孔を穿設した場合を例示したが、本実施例では、水平壁面41bや垂直壁面41aの外面に切目や孔等の加工を施さずに空間部42の形状を維持するように構成した点で上記各実施例と相違している。

【0025】すなわち、図9及び図10に示すものは、紙管本体41の上下水平壁面41b、41b間の空間部42の長手方向に波形折畳み板紙43を一定間隔を存して挿入し、その上下面を空間部内壁面に接着剤44を介して固着したものである。また、この波形折畳み板紙43に代えて図11～12図に示すように、空間部42の長手方向に丸形紙管45や図13～14図に示すように、角形紙管46を挿入し、上下面を接着剤44で固着することもある。

【0026】このように構成すると、前記第1～4実施例と同様に、空間部42が補強されると同時に、弾力性もあることから、梱包緩衝材として利用される他に、表

面に耐水性処理すれば建築工事現場でのコンクリート打ちの型枠材や図16に示すように、コンクリートブロックCに懸架金具を取付けるための懸架構造型枠Dとしても利用できるものである。

【0027】なお、前記各実施例においては、山形紙管について述べたが、本発明はこれに限られるものでなく、溝形、I形、T形、Z形、H形等の形紙管でもよいのは勿論のことであり、また、前記各実施例においては、切目、透孔、補強芯材等を水平壁面に設けた場合について説明したが、垂直壁面に設ける場合もある。要するに、本発明の目的を達成でき、かつ本発明の要旨を逸脱しない範囲において種々設計変更が可能であることは言うまでもない。

【0028】

【発明の効果】本発明は以上説明したとおり、山形、溝形、I形、T形、Z形、H形等に形成した断面形状の形紙管の外周形状に沿った空間をその内部に設けているため、軽量になると共に、弾力性があるので衝撃を喰う機器等を囲う包装用箱の内部梱包緩衝材として利用できるばかりでなく、その側面を耐水処理を施すことにより、建築工事現場で使用されるコンクリートを打ち込むための型枠やコンクリートブロック壁に懸架金具を取付けるための懸架構造型枠としても使用でき、その応用範囲が極めて広く、且つ板紙使用のため、加工が容易であり、回収して再抄紙ができリサイクル可能となり、最近問題となっている地球環境上にも有益な素材として使用できるものである。

【図面の簡単な説明】

【図1】(A)～(F)は本発明の第1実施例図であって、各種の形紙管を示す斜視図である。

【図2】第2実施例図であって、切目を施した形紙管を示す斜視図である。

【図3】図2の要部の拡大断面図である。

【図4】第3実施例図であって、孔を穿設した形紙管の斜視図である。

【図5】(A)、(B)は図4の形紙管に小さい紙管を挿入する前の簡略断面図と挿入後の簡略断面図である。

【図6】図4の形紙管に小さい紙管を挿入した実施例の簡略断面図である。

【図7】第4実施例図であって、八角形の切目孔を設けた形紙管の斜視図である。

【図8】図7の要部の拡大断面図である。

10 【図9】第5実施例図であって、長手方向に波形板紙を挿入した形紙管の斜視図である。

【図10】図9の要部の拡大断面図である。

【図11】長手方向に丸型紙管を挿入した形紙管の斜視図である。

【図12】図11の要部の拡大断面図である。

【図13】長手方向に角形紙管を挿入した形紙管の斜視図である。

【図14】図13の要部の拡大断面図である。

20 【図15】本発明の形紙管を梱包緩衝材として利用した状態の横断面図である。

【図16】本発明の形紙管をコンクリートブロックの簡易型枠として利用した横断面図である。

【図17】(A)～(C)は従来の板紙からなる各種の梱包緩衝材の斜視図である。

【符号の説明】

1, 11, 21, 31, 41 形紙管

2, 12, 22, 32, 42 空間部

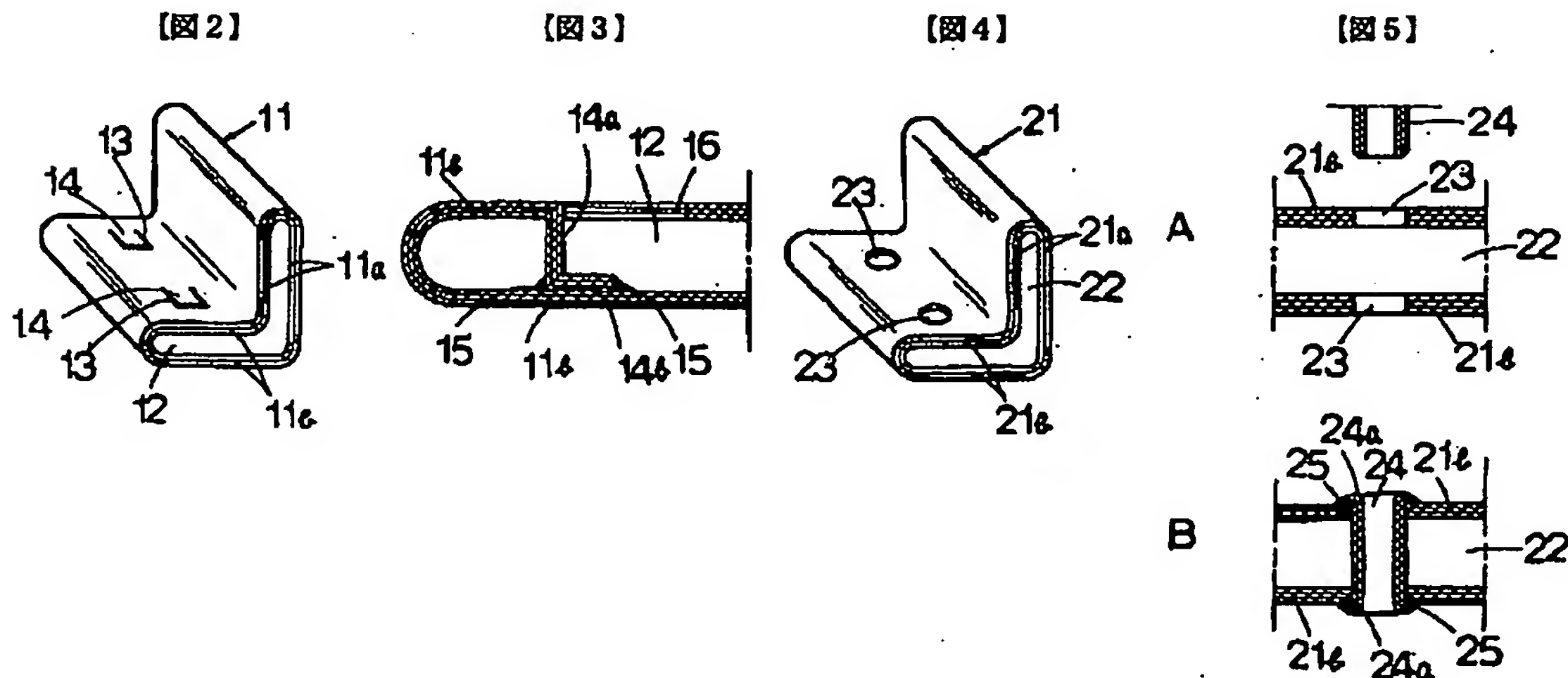
13 切目

14 切起し片

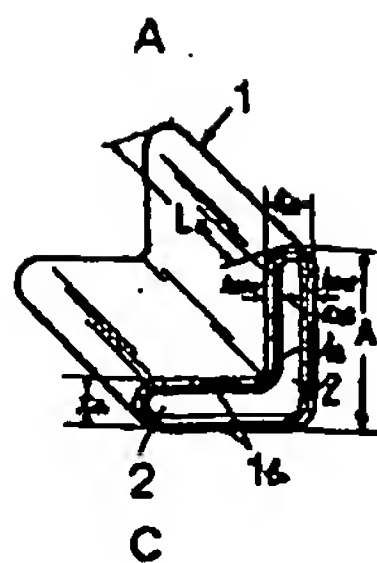
30 24 小紙管

43 波形板紙

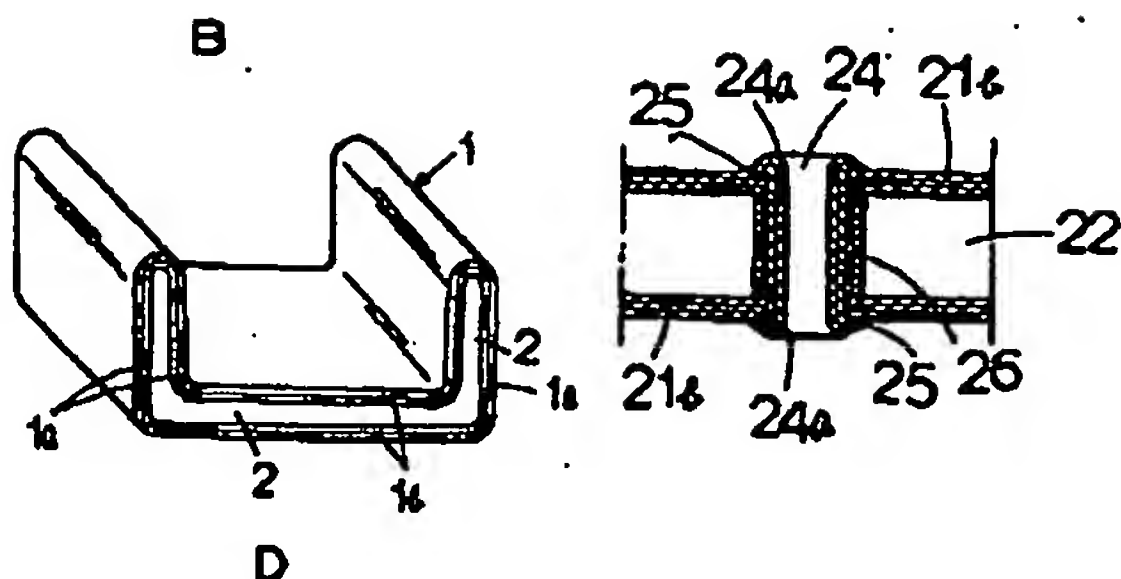
45 丸形・角形紙管



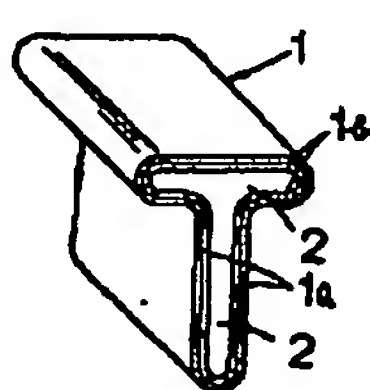
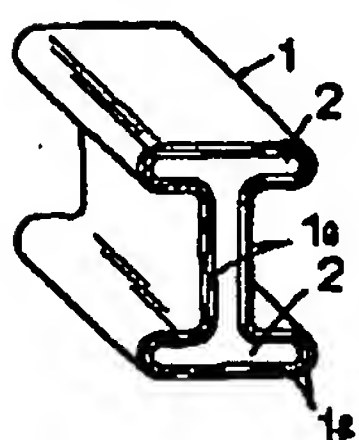
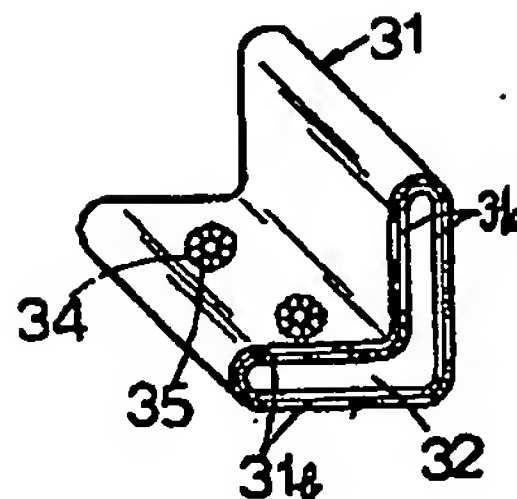
【図1】



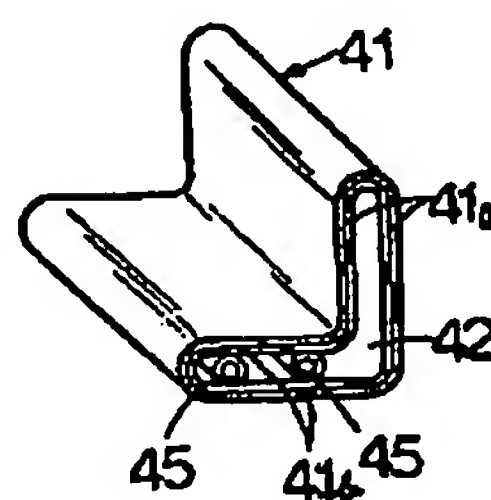
【図6】



【図7】

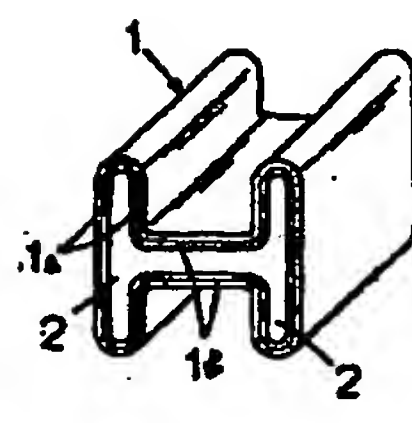
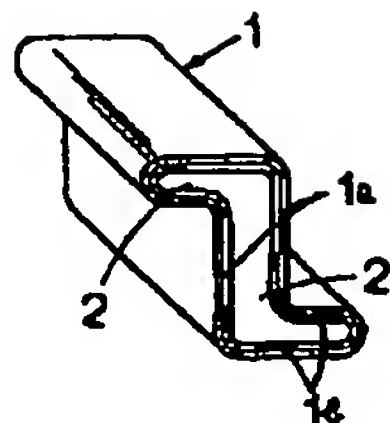


【図11】

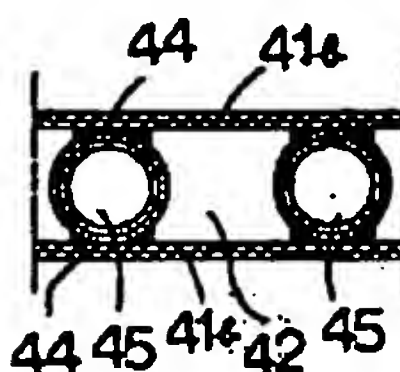


E

F



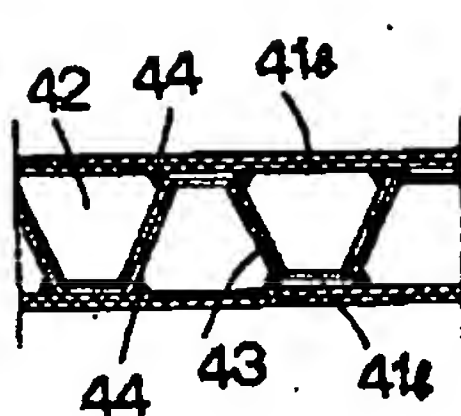
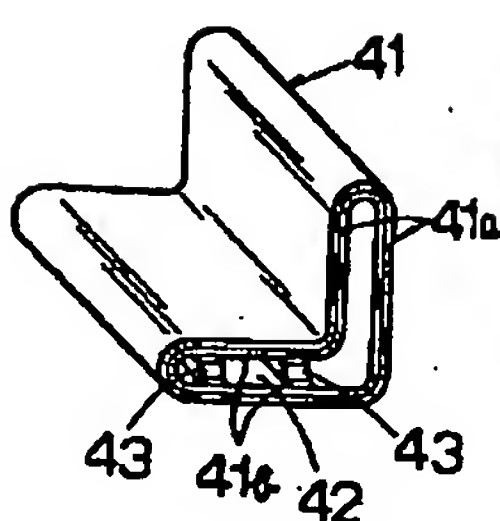
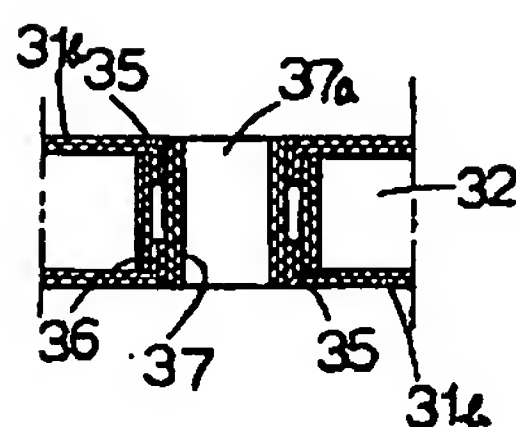
【図12】



【図8】

【図9】

【図10】

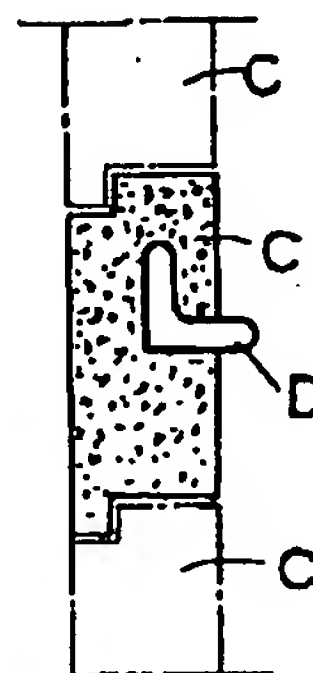
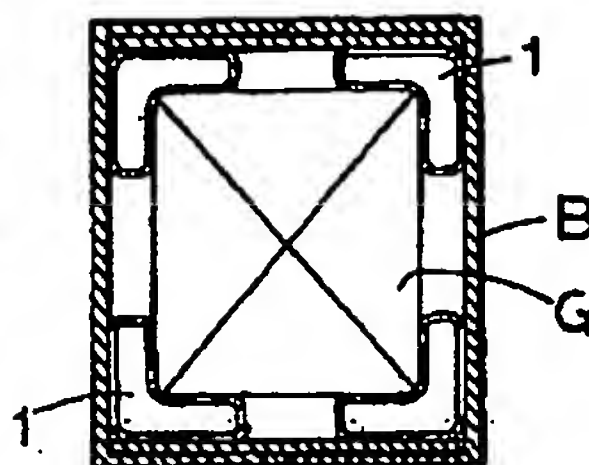
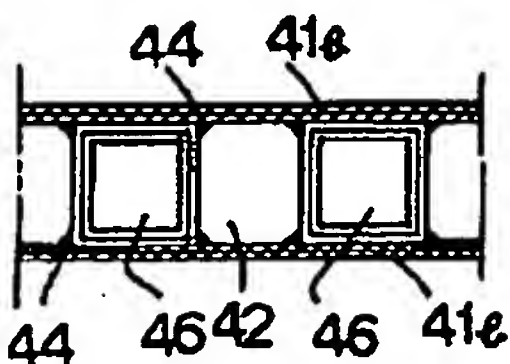
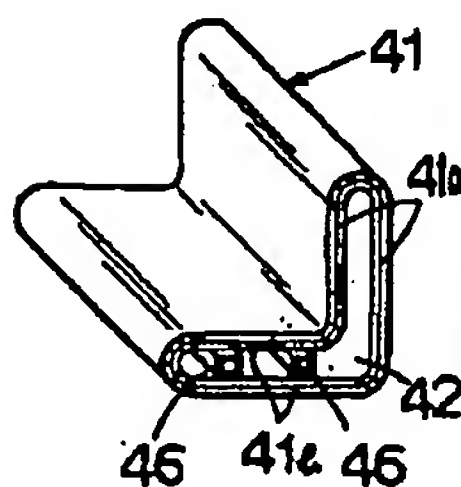


【図16】

【図13】

【図14】

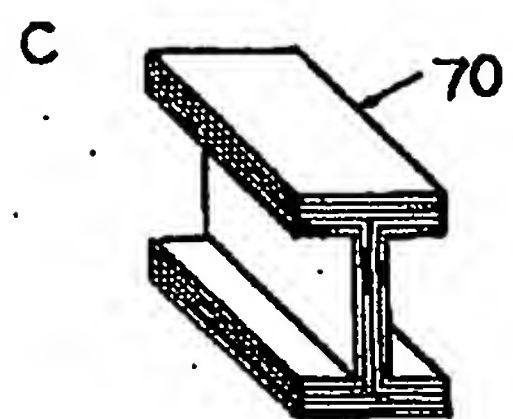
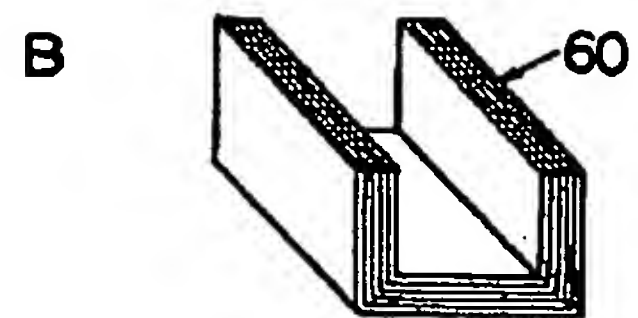
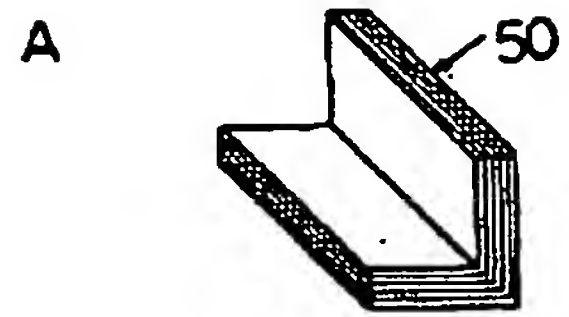
【図15】



(6)

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【図17】



【特許請求の範囲】

【請求項1】 山形、溝形、I形、T形、Z形、H形等に形成した断面形状の形紙管で、該形紙管の外周形状に沿った空間部をその内部に設けたことを特徴とする形紙管。

【請求項2】 空間部内に形状を維持する補強部材が介在させてある請求項1記載の形紙管。

【請求項3】 補強部材が壁面に設けた切目の切起し片で形成されている請求項2記載の形紙管。

【請求項4】 補強部材が空間部を直交する小紙管で形成されている請求項2記載の形紙管。

【請求項5】 補強部材が長手方向に挿入される波形板紙や丸形・角形紙管で形成されている請求項2記載の形紙管。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、種々の断面形状をした形紙管で、さらに詳しくは、精密機械器具、測定機器、制御機器、家電製品あるいはガラス、陶磁器など衝撃や振動を嫌う物品の梱包緩衝材として用いられ、或は建築現場等において使用される型枠としても使用できる形紙管に関するものである。

【0002】本発明で言う「形紙管」とは、鉄鋼分野での圧延機により鋼を圧延して、各種の断面形状に形成される条鋼、例えば、山形鋼、溝形鋼、I形鋼、T形鋼、Z形鋼、H形鋼等を総称して言う形鋼と同じ断面形状の紙管で構成されているものを言う。

【0003】

【従来の技術】従来、精密機械器具、測定機器や制御機器、家電製品あるいはガラス、陶磁器製品など衝撃や振動に対して十分な保護が要求される物品を運搬輸送するには種々の緩衝材が用いられている。

【0004】その代表例としては、発泡スチロール成形品や粒状品または合成樹脂フィルム間に多数の空気膨出部を設けた緩衝性シート材、あるいは図17(A)、

(B)、(C)に示すように、複数枚の板紙を重ねさせた山形合紙50や溝形合紙60やI形合紙70などが梱包緩衝材として用いられている。

【0005】

【発明が解決しようとする課題】しかしながら、発泡スチロールの緩衝材の場合は、緩衝性において優れた効力を発揮するが、強度保持の面から発泡スチロールの厚みを大きくしなければならず、包装物品の大きさに比べて包装形態が異常に大きくなるという不都合を生じると共に、物品到着後の処分に困るという問題があった。

【0006】また、空気膨出部を設けた緩衝性シート材は、応用範囲が広く、物品の形状や大きさが相違していても、簡単に包装でき、また包装した物品をある程度の衝撃から保護することができるという利点はあるが、物品を安全に輸送するには、その外側を幾重にも包装しな

ければならず、包装作業が煩雑であるばかりでなく、包装した状態で包装箱内に入れるから、包装箱内に収容する作業が困難であった。また、包装しても内部において物品が遊動することがあり、前述した物品の緩衝包装用としては不向きであり、運搬輸送時の信頼性を確保することができない。

【0007】また、帯状原紙を複数枚重合貼着した図17の(A)、(B)、(C)に示す山形、溝形、I型などの断面形状に形成した重合紙からなる緩衝材は、使用済み後にリサイクルの故紙として、板紙に再利用できることから、最近増加する傾向にあるが、この場合、肉厚の大きなものを得るには、帯状原紙を何枚も重ねなければならず、製作上多数の工程を要し、かつその部材に弾性を持たせる事も困難であった。

【0008】例えば、図17(A)の示すように、一般寸法のL50×50×6Kの寸法の山形合紙50を作るには、仮りに1mmの厚さの板紙を使用するとすれば、直角に折り曲げたものを6枚貼り合わさなければならず、そのために、次の6枚の原紙を用意せねばならない。

外側部分	L50×50×1
第2番目部分	L49×49×1
第3番目部分	L48×48×1
第4番目部分	L47×47×1
第5番目部分	L46×46×1
内側部分	L45×45×1

【0009】このように、接合に際しての作業に手間がかかり、資材を多量に要することから、経済的にも問題があると共に、重くなることと、弾力性にも劣ることから、やはり運搬輸送時に用いる梱包緩衝材としては適さないと言う問題点があった。

【0010】一方、建築工事現場等で打ち込まれたコンクリートを所定の形状、寸法に保ち、コンクリートが適当な強度に達するまで支持する型枠は木製の板状体であるから、重くて工事施工時や運搬時において大変取扱いにくく、また木材であるから腐朽しやすく、腐朽すると焼却処分せざるを得なくなり、木材資源の保護からも適さないと言う問題点があった。

【0011】本発明は、上記のような問題を解決することを課題として、研究開発されたもので、軽くて弾力性があり、丈夫で取扱いやすく、安価に供給できると共に、使用済み後に再利用、再使用するためにリサイクル可能な形紙管を提供することを目的とするものである。

【0012】

【課題を解決するための手段】上記の課題を解決し、その目的を達成する手段として、本発明では、山形、溝形、I形、T形、Z形、H形等に形成した断面形状の形紙管で、該形紙管の外周形状に沿った空間部をその内部に設けたことを特徴とする形紙管を開発し、採用した。

【0013】また、本発明では上記のように構成した形紙管において、空間部内に形状を維持する補強部材が介

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Oct 24, 1995

DERWENT-ACC-NO: 1995-400268

DERWENT-WEEK: 199551

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TITLE: Shaped paper tube packaging buffer material for packaging e.g. domestic appliances etc. - has internal longitudinal cavity around H=,Z= or other shaped cross=sectional profile NoAbstract

PRIORITY-DATA: 1994JP-0093094 (April 5, 1994)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> JP 07276543 A	October 24, 1995		006	B31C011/00

INT-CL (IPC): [B31 C 11/00](#); [B65 D 81/113](#)

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Oct 24, 1995

TITLE: MOLDED PAPER PIPE

INVENTOR-INFORMATION:

COUNTRY

TANAKA, JUNKICHI

INT-CL (IPC): B31 C 11/00; B65 D 81/113

ABSTRACT:

PURPOSE: To provide a molded paper pipe which is light in weight, elastic, strong, easy to handle, suppliable inexpensively and recycleable to reutilize and reuse after the paper pipe is finished its use.

CONSTITUTION: In a molded paper pipe 1, it has a sectional form of an angle shape, a channel shape, I shape, T shape, Z shape, H shape, etc., and it is constituted by providing a spatial part 2 running along an outer circumferential form of the molded paper pipe on its inside.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention is the form paper tube which carried out various cross-section configurations, is used in more detail as packing shock absorbing material of the goods which dislike impacts, such as a precision instrument instrument, measuring equipment, a control equipment, home electronics or glass, and pottery, and vibration, or relates to the form paper tube which can be used also as shuttering used in a construction site etc.

[0002] Steel is rolled out with the rolling mill in the steel field, and what consists of paper tubes of the same cross-section configuration as the shape steel which names generically and says the bar steel formed in various kinds of cross-section configurations, for example, angle steel, channel steel, double T steel, T steel, Z steel, an H beam, etc. is called "form paper tube" said by this invention.

[0003]

[Description of the Prior Art] Various shock absorbing material is used for carrying out conveyance transportation of the goods with which sufficient protection is demanded from impacts, such as a precision instrument instrument, measuring equipment, a control equipment, home electronics or glass, and a pottery product, or vibration conventionally.

[0004] As shown in the buffer nature web material which prepared much air bulge sections between styrene foam mold goods, the granular article, or the synthetic-resin film or drawing 17 (A), (B), and (C) as the example of representation, Yamagata interleaving paper 50 and the quirk interleaving paper 60 to which the polymerization of two or more sheets of paper boards was carried out, I form interleaving paper 70, etc. are used as packing shock absorbing material.

[0005]

[Problem(s) to be Solved by the Invention] However, in the case of the shock absorbing material of styrene foam, the effect which was excellent in buffer nature was demonstrated, but thickness of styrene foam had to be enlarged from the field of maintenance on the strength, and while producing unarranging [that a package gestalt became large unusually compared with the magnitude of packaging goods], there was a problem referred to as being troubled by the disposal after goods arrival.

[0006] Moreover, although there is an advantage that the goods which could pack easily and were packed can be protected from a certain amount of impact even if the buffer nature web material which prepared the air bulge section has the wide application range and the configuration and magnitude of goods are different Since it put in in the shipping box after it had to pack the outside several times over and a package is not only complicated, but it had packed in order to have conveyed goods to insurance, the activity held in a shipping box was difficult. Moreover, even if it packs, as an object for the buffer package of the goods which goods may move idly and were mentioned above inside, it is unsuitable, and dependability at the time of conveyance transportation cannot be secured.

[0007] Moreover, although the shock absorbing material which consists of polymerization paper formed in cross-section configurations, such as Yamagata which shows band-like stencil paper to (A) of drawing 17 R> 7 which carried out two or more sheet polymerization attachment, (B), and (C), a quirk,

and an I-beam, is in the inclination which increases recently as a waste paper of recycle after used since it is reusable to the paper board. In this case, in order to have obtained the thick big thing, many sheets and the thing [pile] for which it will not become if it can kick, but the process of manufacture top a large number is required, and elasticity is given to that member were also difficult in band-like stencil paper.

[0008] For example, if the paper board with a thickness of 1mm is temporarily used in order to make the Yamagata interleaving paper 50 of the dimension of L50x50x6K of a general dimension so that drawing 17 (A) may show, six things bent at the right angle must be stuck, therefore six sheets of stencil paper as follows must be prepared.

Lateral part L50x50x1 2nd part L49x49x1 3rd part L48x48x1 4th part L47x47x1 5th part L46x46x1 inside part L45x45x1 [0009] Thus, the activity for junction took time and effort, and while there was a problem also economically from requiring materials so much, there was a trouble referred to as not suitable as packing shock absorbing material too used at the time of conveyance transportation from becoming heavy and it being inferior also to resiliency.

[0010] The trouble said as it cannot but carry out incineration disposal very much by being heavy and being hard to deal with it at the time of construction construction and conveyance since it is a wooden plate if it is easy to dilapidate and it is dilapidated since the shuttering supported until it, on the other hand, maintains at a predetermined configuration and a dimension the concrete driven in by the construction site etc. and concrete reaches suitable reinforcement is wood, and it is not suitable from protection of a wood resource, either was.

[0011] It aims at offering reuse and a form paper tube recyclable in order to carry out a reuse after used while research and development in this invention was done, it is light and elastic by making to solve the above problems into a technical problem, and it is strong, being easy to deal with it and being able to supply it cheaply.

[0012]

[Means for Solving the Problem] The above-mentioned technical problem was solved, and the form paper tube characterized by preparing the space section in alignment with the periphery configuration of this form paper tube in the interior was developed and adopted by this invention as a means to attain the purpose, with the form paper tube of the cross-section configuration formed in Yamagata, a quirk, I form, T form, Z form, H form, etc.

[0013] Moreover, it sets to the form paper tube constituted from this invention as mentioned above. To space circles, a configuration The form paper tube which the reinforcement member to maintain makes have intervened And the form paper tube and reinforcement member which are formed with the small paper tube with which the form paper tube and the above-mentioned reinforcement member of the break which the reinforcement member prepared in the wall surface which carry out louvering and are formed by the piece intersect the space section perpendicularly developed and adopted the form paper tube currently formed with corrugated paper, and the round shape and the square shape paper tube which are inserted in a longitudinal direction.

[0014]

[Function] The form paper tube which has the space section inside with a comparatively thin wall surface Since elastic force is given while being lightweight-ized by the space section disagreeable, if the form paper tube which intervened the reinforcement member which can use as packing shock absorbing material of oscillating goods, and maintains a configuration to space circles is used It can fully be used also as shock absorbing material of large-sized goods, further, if waterproof processing of the front face is carried out, it can be used as shuttering material, it is light and handling becomes simple, a breakaway and crushing are also easy and after used has facilities reusable to the paper board etc. as a waste paper of recycle.

[0015]

[Example]

(Example 1) When the 1st example of this invention is explained below based on drawing 1 of an accompanying drawing, 1 is the body of a form paper tube made into cross-section configurations, such

as Yamagata which was formed by the spiral volume or the planospiral and consisted of perpendicular wall surface 1a and level wall surface 1b, a quirk, I form, T form, Z form, and H form. 2 is the space section in alignment with the periphery configuration formed in the interior of perpendicular wall surface 1a and level wall surface 1b.

[0016] In the Yamagata paper tube of A of drawing 1, the thickness t_{aw} of perpendicular wall surface 1a, the inside wall surface distance t_{as} of the space section 2, and the external thickness t_a have the following relation. $t_a = 2t_{aw} + t_{as}$, therefore the body 1 of a form paper tube will be expressed as the next notation, if the length of one side is set to A. $L \times A \times t_a$ [0017] thus, as shown in drawing 1515, the constituted body 1 of a form paper tube arranges this in the square section of carton box B beforehand, and is disagreeable inside -- if the oscillating goods G are held and it is used as packing shock absorbing material, buffer nature is good and disagreeable -- the oscillating goods G can be protected to the impact added from an omnidirection, and it can transport to insurance.

[0018] (Example 2) Although drawing 2 and 3 show the 2nd example and the fundamental configuration is common in said 1st example A different point from an example 1 to level wall surface 11b of the upper part of the body 11 of a form paper tube A square, Prepare and give proper spacing, this Kirime 13 carries out louvering of Kirime 13, such as circular and a hemicycle, and a piece 14 is caudad bent at a right angle. It is having constituted so that might make the space section 12 set up perpendicular piece 14a, the lower limit's might be bent at a right angle in the side, level piece 14b's might be joined to lower level wall surface 11b and it might fix with adhesives 15, and 11a shows the perpendicular wall surface.

[0019] Thus, it becomes the packing shock absorbing material with which the hole 16 formed of Kirime 13 while it does not deform easily even if it will carry out louvering if constituted, and the space section 12 will be reinforced by the piece 14 and wall thickness is thin, but it is strong and being able to maintain a configuration, and the space section 12 are more rich in resiliency conjointly.

[0020] (Example 3) Although drawing 4 -6 show the 3rd example and the fundamental configuration is common in said 1st example and 2nd example Replace a different point from an example 2 with Kirime 13, it installs bores 23 and 23 through the level wall surfaces 21b and 21b of the upper and lower sides of the body 21 of a form paper tube, and inserts the small round shape paper tube 24 in these bores 23 and 23, respectively. The round shape paper tube 24 is made to be placed between the space sections 22, the vertical opening edges 24a and 24a of the round shape paper tube 24 are extended, it is having fixed and constituted this extension section through adhesives 25 on the up-and-down level wall surfaces 21b and 21b, and 21a shows the perpendicular wall surface. Moreover, as shown in drawing 6, the container liner 26 is formed in the space section 22 in which a bore 23 is located, and the round shape paper tube 24 may be inserted in this container liner 26.

[0021] thus, a configuration reinforces the space section 22 with the round shape paper tube 24 --
 ***** -- wall thickness -- ***** -- even if thin, it is strong, and it is elastic and the configuration of the space section 22 can be maintained.

[0022] (Example 4) Drawing 7 -8 are what shows the 4th example and combined the 2nd example and the 3rd example. That is, octagon-like Kirime 34 is suitably given to level wall surface 31b of the top face of the body 31 of a paper tube, and level wall surface 31b at the bottom for every spacing, it inserts in and fixes so that it may put between the container liners 36 and outer cases 37 of the small paper tube which this Kirime 34 carried out louvering and formed the piece 35 in the space section 32, and 31a shows the perpendicular wall surface.

[0023] Thus, if constituted, louvering is carried out, between a container liner 36 and an outer case 37, ** arrival, while it being carried out and separating is lost, it is reinforced with the dual structure of a container liner 36 and an outer case 37, and configuration maintaining [of the space section 32] becomes more certain, and elastic force can fully demonstrate [a piece 35] in space section 37a of an outer case 37, and the space section 32.

[0024] (Example 5) Drawing 9 -14 show the 5th example, and in the 1-4th examples of the above, although they illustrated the case where each drilled a break and a hole in the external surface of a level wall surface, they are different from each above-mentioned example at the point constituted from this example so that the configuration of the space section 42 might be maintained without processing a

break, a hole, etc. on the external surface of level wall surface 41b or perpendicular wall surface 41a. [0025] That is, what is shown in drawing 9 and drawing 10 consists fixed spacing in the longitudinal direction of the space section 42 between vertical level wall surface 41b of the body 41 of a paper tube, and 41b, inserts the wave folding paper board 43 in it, and fixes the vertical side through adhesives 44 to a space section internal surface. Moreover, as it replaces with this wave folding paper board 43 and is shown in drawing 11 - 12 Fig., as shown in round shape paper tube 45, drawing 13 - 14 Fig., the square shape paper tube 46 may be inserted in the longitudinal direction of the space section 42, and a vertical side may be fixed with adhesives 44.

[0026] Thus, if resiliency will also be used as packing shock absorbing material from a certain thing like said 1-4th examples at the same time the space section 42 is reinforced if constituted, and also waterproof processing is carried out on a front face, as shown in the shuttering material and drawing 16 of concrete placing in a construction site, it can use for a concrete block C also as a suspension structured type frame D for attaching suspension metallic ornaments.

[0027] in addition, in said each example, although the case where this invention is not restricted to this, comes out, and there is not to mention the thing as which form paper tubes, such as a quirk, I form, T form, Z form, and H form, are sufficient, and a break, a bore, a reinforcement core material, etc. are prepared in a level wall surface in said each example although the Yamagata paper tube was described is explained, it may prepare in a perpendicular wall surface It cannot be overemphasized that a design change is variously possible in the range which can attain the purpose of this invention and does not deviate from the summary of this invention in short.

[0028]

[Effect of the Invention] Since this invention has established the space in alignment with the periphery configuration of the form paper tube of the cross-section configuration formed in Yamagata, a quirk, I form, T form, Z form, H form, etc. in the interior as it was explained above, while it becomes lightweight The side face by performing waterproof processing it not only can use as internal packing shock absorbing material of the box for a package surrounding the device which dislikes an impact since it is elastic, but It can be used for the shuttering and the concrete block wall for driving in the concrete used by the construction site also as a suspension structured type frame for attaching suspension metallic ornaments, and the application range is very wide. And a paper board use sake, It can be used as a useful material also on the earth environment which processing is easy, it collects, and re-paper making can be performed, becomes recyclable, and poses a problem recently.

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CLAIMS

[Claim(s)]

[Claim 1] The form paper tube characterized by preparing the space section in alignment with the periphery configuration of this form paper tube in the interior with the form paper tube of the cross-section configuration formed in Yamagata, a quirk, I form, T form, Z form, H form, etc.

[Claim 2] The form paper tube according to claim 1 which the reinforcement member which maintains a configuration makes placed between space circles.

[Claim 3] The form paper tube according to claim 2 with which the break prepared in the wall surface carries out louvering, and the reinforcement member is formed by the piece.

[Claim 4] The form paper tube according to claim 2 currently formed with the small paper tube with which a reinforcement member intersects the space section perpendicularly.

[Claim 5] The form paper tube according to claim 2 in which the reinforcement member is formed with corrugated paper, and the round shape and the square shape paper tube which are inserted in a longitudinal direction.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] (A) - (F) is the 1st example Fig. of this invention, and is the perspective view showing various kinds of form paper tubes.

[Drawing 2] It is the 2nd example Fig. and is the perspective view showing the form paper tube which gave the break.

[Drawing 3] It is the expanded sectional view of the important section of drawing 2.

[Drawing 4] It is the 3rd example Fig. and is the perspective view of the form paper tube which drilled the hole.

[Drawing 5] (A) and (B) are the simple sectional view before inserting a small paper tube in the form paper tube of drawing 4, and a simple sectional view after insertion.

[Drawing 6] It is the simple sectional view of the example which inserted the small paper tube in the form paper tube of drawing 4.

[Drawing 7] It is the 4th example Fig. and is the perspective view of a form paper tube which prepared the break hole of an octagon.

[Drawing 8] It is the expanded sectional view of the important section of drawing 7.

[Drawing 9] It is the 5th example Fig. and is the perspective view of the form paper tube which inserted corrugated paper in the longitudinal direction.

[Drawing 10] It is the expanded sectional view of the important section of drawing 9.

[Drawing 11] It is the perspective view of the form paper tube which inserted the round shape paper tube in the longitudinal direction.

[Drawing 12] It is the expanded sectional view of the important section of drawing 11.

[Drawing 13] It is the perspective view of the form paper tube which inserted the square shape paper tube in the longitudinal direction.

[Drawing 14] It is the expanded sectional view of the important section of drawing 13.

[Drawing 15] It is a cross-sectional view in the condition of having used the form paper tube of this invention as packing shock absorbing material.

[Drawing 16] It is the cross-sectional view which used the form paper tube of this invention as simple shuttering of a concrete block.

[Drawing 17] (A) - (C) is the perspective view of various kinds of packing shock absorbing material which consists of the conventional paper board.

[Description of Notations]

1, 11, 21, 31, 41 Form paper tube

2, 12, 22, 32, 42 Space section

13 Kirime

14 Carry Out Louvering and it is Piece.

24 Small Paper Tube

43 Corrugated Paper

45 Round Shape and Square Shape Paper Tube